RIVER STAGES AND FLOODS

By BENNETT SWENSON

MOST of the Mississippi Valley States and the West Gulf area had above normal precipitation during May, while in the Atlantic States the amounts were decidedly scanty. The greatest moisture deficiencies occurred from southern New England southward to eastern North Carolina. On the other hand, some northern central States had the wettest May in more than 50 years, and West Gulf sections in excess of twice the normal.

The excess of precipitation in the Central States resulted in severe floods in many streams in the Mississippi Valley for the second consecutive month. Record high stages were approached in many streams and exceeded in a few, in the upper Mississippi River basin and in eastern Texas. Notable among the streams in high flood were the Skunk and Des Moines Rivers in Iowa, the Mississippi River from Burlington, Iowa, to Louisiana, Mo., and the Sabine and Neches Rivers in Texas.

Atlantic Slope drainage.—Whereas precipitation in March and April was above normal, amounts during May were decidedly deficient averaging 50 percent or less of normal over the greater part of the drainage. The rivers from North Carolina southward which were in flood during April receded to low stages by the close of May.

Floods during May were confined to minor overflows in the Connecticut River and upper Susquehanna River Basin, and to overflows which continued from the previous month in the Altamaha River Basin.

Flood stage was exceeded slightly at South Newbury, Vt., on the Connecticut River on May 7–8, as a result of rapidly melting snow in the higher elevations of the upper tributary basin combined with moderate rains on May 7. Minor flooding occurred also in the Chenango and Chemung Rivers in New York from moderately heavy rains on May 6–7, and flood stage was exceeded in the Susquehanna River at Vestal, N. Y.

East Gulf of Mexico drainage.—Extensive flooding which occurred during April extended into the first part of May. Otherwise, precipitation during May was light and no important further rises occurred. Crest stages were reached mainly in April, and a summary of these floods were given in table 1.

Light to moderate floods occurred in the Conecuh and Choctawhatchee Rivers from moderately heavy rains during the period April 14–26. The average depths of rainfall for the individual storm periods were as follows (dates in April): 14th, 2.30 inches; 18th, 1.56 inches; 21st, 1.26 inches; 23d, 1.21 inches; and 26th, 1.67 inches.

Stages in the middle and lower Alabama River basin rose to moderately high flood as the result of frequent rains beginning April 9 and ending with excessive rains on the 26th, several stations reporting over 4 inches on the latter date. The Tallapoosa River at Milstead, Ala., reached a crest of 46.1 feet on April 27–28, the highest stage at that point since 1925.

Heavy rains over the Black Warrior-Tombigbee River Basin during the latter part of March were responsible for the highest stages since December 1926 in the upper Tombigbee River, and further rains in April resulted in one of the longest flood periods of record in the Tombigbee from Demopolis, Ala., southward. Heavy rains occurred in March on the 18–19th, 22–23d, and 26–29th. In the latter period, 8.27 inches was recorded at Tupelo, Miss., in the upper Tombigbee River Basin, and at three stations, Houston, Pontotoc, and Tupelo, Miss., the rainfall averaged 7.30 inches.

The Black Warrior River crested at 62.0 feet at Tuscaloosa, Ala., on March 30 and the Tombigbee crested on the same date at Aberdeen, Miss., at 43.0 feet, the same as the record stage in December 1926. The rise in the Tombigbee continued until April 7 at Demopolis, Ala., when a crest of 61.2 feet was reached, and continued until April 12 in the lower reaches. From then until April 18 the stages fell steadily. Rains occurred on April 18 and again on the 26–27th causing another rise to set in. The rains in the latter period averaged 4.65 inches from Demopolis southward, and caused unprecedented rises in the lower river at still high stages. Demopolis crested at 52.9 feet on April 29, and at Lock No. 1, the crest stage of 41.8 feet on April 28 was the highest of the month.

Heavy rainfall again on May 4–5 produced a minor rise in the upper and middle Tombigbee and checked the fall in the lower reaches where the stages fell below flood stage by the middle of May. The persistent high water increased the flood losses greatly by halting lumber operations and delaying crop planting 4 to 6 weeks. Losses to crops and tangible property have been estimated at about $875,000.

The Pearl River remained above flood stage at Jackson, Miss., from March 20 to May 17, a total of 59 days, and at Pearl River, La., above flood stage prevailed from March 9 to May 20, a total of 73 days. The highest stages reached at Jackson and Pearl River were 34.0 feet on April 4 and 15.9 on April 2–3, respectively. These rises were the result of excessive rains during the latter part of March. Scattered heavy rains occurred again during April from the 18th to the 26th, over the Pearl and Pascagoula River basins. The average rainfall over the two basins during this period was about 9 inches, and the greatest amount reported at any station was 13.22 inches.

Heavy rains occurred again on May 4, but as the rivers were falling no important rises occurred. Light rainfall during the remainder of May allowed the stages to fall steadily. Flood losses in the Pearl and Pascagoula Rivers have been estimated at more than $100,000.

MISSISSIPPI SYSTEM

Widespread flooding occurred during May following extensive and excessive overflows in April. Record or near record floods centering in Iowa but extending to other sections of the upper Mississippi and lower Missouri Valleys resulted from excessive rains during May in a region where streams were generally above normal. Stages in the Skunk and Des Moines Rivers in Iowa, the St. Croix River in Wisconsin, and the Mississippi River from Keokuk, Iowa, to Louisiana, Mo., closely approached or exceeded the highest stages of record. A severe flash flood in the Elkhorn River in Nebraska caused heavy damage in Norfolk, Nebr., on May 11–12. This was followed, a month later, by another disastrous flood in the Elkhorn downstream from Norfolk.

The April flood crests of the Missouri and upper Mississippi Rivers moved downstream causing light flooding in the Mississippi River below the mouth of the Ohio and moderate flooding in the reach below the mouth of the Red River. A crest of 19.4 feet was reached at New Orleans, La., on May 21. The Ouachita and lower Red Rivers were in moderately high flood from heavy rains in May. A summary of flood crests in the Mississippi Valley during April and May 1944 and comparative readings for the period April–June 1943 and prior record stages are given in table 2.

Upper Mississippi Basin.—Records shown in table 3

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indicate that the States, or sections of States, comprising the Mississippi River drainage above Grafton, Ill., have had predominantly above normal precipitation during May and June 1942 and 1943 and April and May of this year. This has resulted in floods at Grafton in each of these periods with crest stages as follows (flood stage 18 feet): 21.7 feet, June 29, 1942; 29.0 feet, May 24, 1943; 22.9 feet, June 21, 1943; 28.6 feet, April 30, 1944; and 21.9 feet, June 1, 1944. During May 1944, precipitation excesses were greatest in Iowa and Minnesota where the State averages of 6.13 and 5.20 inches, respectively, for the month were about 2 inches above normal.

High water was general throughout the drainage area during May 1944 and floods occurred in the Minnesota, St. Croix, Skunk, Iowa, Des Moines, and Mississippi Rivers. The floods were severe notably in central and southeastern Iowa where record or near record stages occurred in the Skunk and Des Moines Rivers and in the Mississippi River at Keokuk, Iowa. The St. Croix River reached the highest stage in 21 years of record at Rush City, Minn., according to the Geological Survey.

The Minnesota River overflowed lowlands for a distance of 160 miles above its mouth as the result of two general rises. The first was produced by general rains beginning April 30 and continuing for a week, the river reaching a crest of 20.0 feet at Mankato, Minn., on May 8. A second rainy period occurred between May 12 and 23 causing a crest of 20.4 feet at Mankato on May 23. The greatest loss was to prospective crops, estimated at $600,000.

The floods in central Iowa streams were caused mainly by intensive rainfall from May 18 to 23. Maximum amounts reported during this period were: Fort Dodge 6.07 inches, Ames 9.22 inches, and Marshalltown 7.37 inches, stations in the upper Des Moines, Skunk, and Iowa River basins, respectively. The greatest station total for the month was 14.65 inches at State Center and the greatest 24-hour amount was 5.74 inches at Ames on the 18–19th.

In the Des Moines River Basin, the Raccoon River crested at Van Meter, Iowa, at 18.3 feet on May 21, only 0.7 foot below the record high stage of September 1926, and the Des Moines River crested at Boone, Iowa, on May 22 at 24.85 feet compared to a high stage of 26.9 in May 1903. The crest passed Des Moines on May 23 at 24.5 feet, and Keosauqua, Iowa, in the lower reach on May 26. Broad crests were generally found in the lower reach of the river due to heavy rains in that area late in the period; Keosauqua reported 5½ inches of rain in 24 hours ending the morning of the 24th.

The Skunk River reached the highest stages of record at Coppock and Augusta, Iowa, in the lower river, with crests of 22.3 and 23.0 feet on May 24 and 26, respectively.

Considerable flooding in the Iowa River occurred at Marshalltown, Iowa, on May 19 and moved slowly downstream, reaching Wapello, Iowa, on May 25. The crest at Wapello was 14.7 feet, 1.5 feet below the March 1929 flood.

The Meramec River in Missouri was in moderate flood on two occasions, May 3 to 6 and May 9 to 12.

The Mississippi River reached bankfull stage at Winona, Minn., on May 18. Below Dubuque, Iowa, light to moderate flooding extended to Keithsburg, Ill. From that point downstream the flow was augmented by the heavy discharge from the Iowa, Skunk, and Des Moines Rivers. The crests at Keokuk, Iowa, and Quincy, Ill., of 20.85 and 23.0 feet, respectively, exceeded the record flood of June 1851, and at Hannibal, Mo., the crest of 22.5 feet equalled the record flood of June 1903 at that point. The crests occurred almost simultaneously from Keithsburg to Hannibal, as follows: Keithsburg and Keokuk on the 27th–28th and at Quincy and Hannibal on the 28th.

Missouri Basin.—Floods occurred during May in the Floyd and Big Sioux Rivers in Iowa, the Kansas River and tributaries, the Elkhorn River in Nebraska, the Grand River in Missouri and portions of the lower Missouri. Crests were generally lower than the floods which occurred in April. Exceptions were the Floyd River, which crested at James, Iowa, at 19.2 feet on May 13, the highest stage in a short period of record, and the disastrous flash flood in the Elkhorn River.

The flood in the Floyd River was caused by heavy rainfall on May 10–11th, occurring on already well-saturated ground. At about the same time rains averaging 2 to 4 inches fell in the Elkhorn River basin north of Norfolk, Nebr. As the crest approached Norfolk, approximately 3 inches of rain occurred shortly before midnight of May 11th in that vicinity with the immediate effect of flooding streets and isolating the city. Property damage in Norfolk and vicinity was heavy.

Moderate overflows occurred during the first ten days of the month in the Smoky Hill, Solomon, Republican, Kansas, Delaware, and Grand Rivers. The floods were generally of short duration and only moderate damage occurred.

The Missouri River reached a crest of 23.5 feet at Kansas City, Mo., compared to a crest of 27.6 feet on April 27. Little or no overflow occurred below Kansas City from this rise. The lower Missouri River at and below Boonville, Mo., receded from the extremely high flood of April, passing below flood stage at the mouth by May 13.

Ohio Basin.—Except for flood stages which continued from the April flood in the lower Ohio River, only a few scattered floods occurred during May. Light flooding resulted at a few points along the Wabash River from heavy rains on May 8–9 in the upper Wabash basin. Local flooding in Little Mill Creek, in the Little Kanawha River basin, on May 17, resulted in the highest stage known at Marshall, W. Va.

White and Arkansas Basins.—Stages were high in the White and Arkansas River basins from last month's floods, and rises occurred again in May, resulting mostly in light to moderate overflows.

The White River crested at 30.6 feet at St. Charles, Ark., on May 11–12, exceeding the April crest by 4.5 feet. In the Arkansas River, flood stages were exceeded at most points from Great Bend, Kans., downstream. The flooding was mostly light and in the reach from Arkansas City to Wichita, Kans., was well below the high flood of April. Light to moderate overflows also occurred in Arkansas River tributaries including the Little Arkansas, and upper Neosho River in Kansas, the Verdigris, North Caandian and Poteau Rivers in Oklahoma, and the Petit Jean River in Arkansas.

Red Basin.—Rains were heavy over the middle and lower Red River Basin late in April and early in May. Flooding was confined largely to the Ouachita in Arkansas and Louisiana, the Little, Sulphur and Cypress in Arkansas and Texas and the lower Red River in Arkansas and Louisiana.

The Ouachita River exceeded flood stage by 9 feet at Arkadelphia, Ark., on May 2 and by 16 feet at Camden, Ark., on May 5. The crest at Camden, 42 feet, was the highest stage measured at the present gage site. High stages occurred in the Little, Sulphur and Cypress River but record stages were not reached. No water was released from Denison Dam during the flood period and overflows

in the Red River were mostly light except in the extreme lower portion. A stage of 38.5 feet, 6.5 feet above flood stage, was reached at Alexandria, La., on May 14.

Lower Mississippi Basin.—The excessive floods in the lower Missouri and upper Mississippi Rivers during April, converged in the Mississippi River to produce a crest of 39.1 feet at St. Louis, Mo., on April 30, exceeding the flood of May 1943 by 0.3 foot and 2.3 feet below the record flood of June 1844. The crest passed Cape Girardeau, Mo., on May 6 at 40.8 feet, 1.6 feet below the May 1943 flood. There was considerable similarity between the 1943 and 1944 floods in this reach of the river as shown in table 2.

The lower Ohio River was falling rapidly with the approach of the crest from the upper Mississippi, and Cairo, Ill., crested on April 29 at 51.2 feet, compared to a stage of 53.0 in May 1943. From Memphis, Tenn., to the mouth of the Red River, stages in the Mississippi exceeded flood only slightly and were generally slightly below the stages of the 1943 flood. However, below the mouth of the Red River, stages were higher than in 1943. The river crested at Baton Rouge, La., between May 17–23 at a stage of 41.3 feet compared to 38.8 feet in 1943, and at New Orleans, La., on May 21 at 19.4 feet, 1.2 feet higher than last year.

West Gulf of Mexico drainage.—Excessive precipitation during May in eastern Texas produced flooding in the Sabine, Neches, Trinity, Brazos, Guadalupe, and Nueces Rivers. Near record stages were reached in the Sabine River and exceeded in the Neches River at Rockland, Tex. The crest at Rockland was 31.8 feet on May 7, compared to the previous high of 28.9 feet in April 1922.

The rainfall occurred in two general periods, the first 5 days of the month and the last decade. The rainfall was generally more intense in the first period and generally caused the excessive flooding. The rains in the second period served largely to prolong the floods. At Bronson, Tex., in the Neches River Basin, the precipitation for the month totaled 21.16 inches. Several stations in east Texas had over 15 inches and precipitation for the eastern third of the State averaged 10.38 inches, or 5.87 inches above the normal.

The greatest flood losses were to prospective crops amounting to millions of dollars.

As a result of melting snow in the mountainous sections of south central Colorado, in the upper Rio Grande Basin, flood stage was reached and exceeded at Lobatos Bridge, Colo., and Embudo and Espanola, N. Mex. Flood stage was reached on May 11 and continued at the end of the month at these stations.

Colorado River Basin.—Rapidly melting snow in the Gunnison River basin produced a sudden rise in the lower Gunnison River and tributaries cresting at Delta, Colo., at 12.8 feet on May 17. This exceeded the previous highest stage of record, 12.7 feet in May 1941.

TABLE 1.—*Flood stages in East Gulf of Mexico drainage, April–May 1944* [1]

River and Station	Flood stage	Dates above flood stage: From—	Dates above flood stage: To—	Crest: Stage	Crest: Date	Maximum stage previously known: Stage	Maximum stage previously known: Date
Chattahoochee:							
Columbus, Ga.	34	Apr. 28	Apr. 28	34.6	Apr. 28	53.2	Mar. 15, 1929
Eufaula, Ala.	40	Mar. 30	Apr. 1	44.8	Mar. 31	63.8	Mar. 17, 1929
		Apr. 27	Apr. 30	48.9	Apr. 29		
Columbia, Ala.	42	Mar. 31	Apr. 1	43.1	Apr. 1	56.0	Mar. 18, 1929
		Apr. 28	Apr. 30	45.5	Apr. 29		
Flint:							
Montezuma, Ga.	20	Mar. 31	Apr. 2	21.2	Apr. 1	27.4	Mar. 17, 1929
Albany, Ga.	20	Mar. 23	Apr. 6	31.3	Mar. 26	36.6	Jan. 21, 1925
				28.4	Apr. 3		
		Apr. 16	Apr. 22	26.5	Apr. 17		
		Apr. 27	May 4	6.9	Apr. 29		
Bainbridge, Ga.	25	Mar. 25	Apr. 8	32.9	Apr. 30	40.9	Jan. 22, 1925
		Apr. 18	Apr. 26	28.9	Apr. 22		
		Apr. 29	May 6	29.5	May 2		
Apalachicola:							
Chattahoochee, Fla.	20	Mar. 25	Apr. 7	24.8	Mar. 28	35.0	Mar. 20, 1929
				25.6	Apr. 2–3		
		Apr. 20	May 4	21.5	Apr. 22		
				25.0	May 1		
Blountstown, Fla.	15	Mar. 20	May 17	23.1	Mar. 29	28.6	Mar. 21, 1929
				23.6	Apr. 3		
				21.8	Apr. 23–25		
				23.1	May 2		
Choctawhatchee:							
Newton, Ala.	19	Apr. 16	Apr. 17	23.0	Apr. 17	39.4	Mar. 15, 1929
Geneva, Ala.	23	Apr. 23	Apr. 24	23.3	Apr. 23	46.9	Mar. 16, 1929
Caryville, Fla.	12	Mar. 23	Apr. 6	13.6	Mar. 28	27.1	Mar. 17, 1929
		Apr. 18	May 3	13.1	Apr. 3		
				13.3	Apr. 21, 25		
Conecuh:							
River Falls, Ala.	35	Mar. 31	Apr. 1	36.0	Mar. 31	50.5	Mar. 15, 1929
		Apr. 28	Apr. 30	39.0	Apr. 29		
Brewton, Ala.	17	Mar. 24	Apr. 5	19.8	Mar. 28	33.3	Do.
				18.9	Apr. 3		
		Apr. 27	Apr. 28	17.0	Apr. 27–28		
		Apr. 29	May 3	18.7	May 1		
Oostanaula:							
Resaca, Ga.	22	Mar. 29	Apr. 3	28.7	Mar. 31	36.6	Apr. 1, 1886
Rome, Ga.	25	do.	Apr. 2	29.0	Mar. 30–31	40.3	Do.
Coosa:							
Mayos Bar Lock, Ga.	28	do.	Apr. 3	32.9	Mar. 31	37.0	Dec. 30, 1932
Gadsden, Ala.	20	Mar. 28	Apr. 7	25.25	do.	36.7	Apr. 6, 1886
Lock No. 4, Lincoln, Ala.	17	do.	Apr. 5	20.8	Mar. 30	24.5	Apr. 9, 1938
Childersburg, Ala.	20	Mar. 29	Apr. 1	22.3	do.	30.0	Do.
Wetumpka, Ala.	45	Apr. 28	Apr. 29	45.5	Apr. 29	61.7	Apr. 1, 1886
Tallapoosa: Milstead, Ala.	40	Apr. 27	Apr. 28	46.1	Apr. 28	54.0	Dec. 10, 1919
Cahaba:							
Centerville, Ala.	23	Apr. 12	Apr. 12	25.4	Apr. 12	37.8	July 8, 1916
		Apr. 27	Apr. 27	25.0	Apr. 27		
Marion Junction, Ala.	36	Mar. 31	Apr. 2	37.5	Apr. 1	42.9	Aug. 16, 1939
Alabama:							
Montgomery, Ala.	35	Mar. 29	Apr. 4	45.8	do.	59.7	Apr. 1, 1886
		Apr. 27	May 2	48.3	Apr. 29		
Selma, Ala.	45	Mar. 30	Apr. 5	49.3	Apr. 2	57.0	Apr. 8, 1886
		Apr. 27	May 3	50.5	Apr. 30		
Millers Ferry, Ala.	40	Mar. 24	Apr. 10	51.3	Apr. 3	56.8	Mar. —, 1929
		Apr. 21	May 6	52.0	May 2		
Black Warrior:							
Lock No. 10, Tuscaloosa, Ala.	47	Mar. 28	Apr. 2	62.0	Mar. 30	68.6	Apr. 18, 1900
		Apr. 13	Apr. 13	47.3	Apr. 13		
Lock No. 7, Eutaw, Ala.	35	Mar. 28	Apr. 10	53.2	Apr. 2		
		Apr. 12	Apr. 18	42.2	Apr. 15		
		Apr. 25	May 2	41.3	Apr. 29		
Tombigbee:							
Aberdeen, Miss.	34	Mar. 28	Apr. 4	43.0	Mar. 30	44.8	Apr. 20, 1892
Columbus, Miss.	29	Mar. 29	Apr. 5	37.6	Apr. 1		Dec. 28, 1926
Gainesville, Ala.	36	do.	Apr. 16	50.6	May 5	47.1	Apr. 10, 1938
Lock No. 4, Demopolis, Ala.	39	Mar. 22	May 12	61.2	Apr. 7	73.1	Apr. 22, 1900
				52.9	Apr. 29		
Lock No. 3, Ala.	33	Mar. 21	May 15	59.3	Apr. 8–9	66.1	Apr. —, 1900
				56.1	Apr. 28		
Lock No. 2, Ala.	46	Mar. 23	May 13	60.7	Apr. 9	65.9	Apr. —, 1874
				58.4	Apr. 28		
Lock No. 1, Ala.	31	do.	May 16	41.5	Apr. 12	51.8	May —, 1874
				40.0	Apr. 22		
				41.8	Apr. 28		
Chickasawhay:							
Enterprise, Miss.	20	Mar. 30	Apr. 1	23.7	Mar. 31	37.2	Apr. —, 1900
		Apr. 20	Apr. 21	21.7	Apr. 21		
		Apr. 25	Apr. 30	26.3	Apr. 28		
Shubuta, Miss.	30	Apr. 3	Apr. 3	30.2	Apr. 3	47.9	Apr. —, 1900
		Apr. 23	May 3	37.4	Apr. 30		
Waynesboro, Miss.	35	Apr. 26	May 2	38.2	Apr. 27	48.4	Apr. 10, 1938
Pascagoula: Merrill, Miss.	22	Mar. 24	Apr. 7	24.4	Apr. 1–2	32.5	Apr. —, 1900
		Apr. 27	May 8	25.3	May 1		
Bogue Chitto: Franklinton, La.	11	Mar. 29	Apr. 1	13.7	Mar. 30	18.3	Mar. 22, 1943
Pearl:							
Edinburg, Miss.	20	Mar. 28	Apr. 4	25.9	Mar. 31	29.0	Mar. 1, 1902
		Apr. 27	May 1	22.1	Apr. 29		
Jackson, Miss.	18	Mar. 20	May 17	34.0	Apr. 4	37.2	Apr. 1, 1902
				27.3	Apr. 30		
				27.4	May 5		
Monticello, Miss.	15	Mar. 22	Apr. 17	18.2	Mar. 24	31.0	Apr. —, 1902
				22.6	Apr. 1		
				23.6	Apr. 8		
		Apr. 21	May 13	19.7	Apr. 25, 29		
				18.6	May 7		
Columbia, Miss.	17	Mar. 24	Apr. 18	18.6	Mar. 25		—, 1874
				22.3	Apr. 5		
				22.8	Apr. 10		
		Apr. 24	May 12	19.6	Apr. 28		
				18.4	May 7–8		
Pearl River, La.	12	Mar. 16	May 30	15.9	Apr. 2–3	20.2	—, 1874
				15.6	Apr. 5–17		
				15.5	May 8		

[1] Including dates in March when flooding continued into April.

TABLE 1.—*Flood stages in East Gulf of Mexico drainage, April–May 1944* [1]—Continued

River and Station	Flood stage	Dates above flood stage: From—	Dates above flood stage: To—	Crest: Stage	Crest: Date	Maximum stage previously known: Stage	Maximum stage previously known: Date
Flint—Continued.							
Albany, Ga.	20	Mar. 23	Apr. 6	31.3	Mar. 26	36.6	Jan. 21, 1925
				28.4	Apr. 3		
		Apr. 16	Apr. 22	26.5	Apr. 17		
		Apr. 27	May 4	6.9	Apr. 29		
Bainbridge, Ga.	25	Mar. 25	Apr. 8	32.9	Apr. 30	40.9	Jan. 22, 1925
		Apr. 18	Apr. 26	28.9	Apr. 22		
		Apr. 29	May 6	29.5	May 2		
Apalachicola:							
Chattahoochee, Fla.	20	Mar. 25	Apr. 7	24.8	Mar. 28	35.0	Mar. 20, 1929
				25.6	Apr. 2–3		
		Apr. 20	May 4	21.5	Apr. 22		
				25.0	May 1		
Blountstown, Fla.	15	Mar. 20	May 17	23.1	Mar. 29	28.6	Mar. 21, 1929
				23.6	Apr. 3		
				21.8	Apr. 23–25		
				23.1	May 2		
Choctawhatchee:							
Newton, Ala.	19	Apr. 16	Apr. 17	23.0	Apr. 17	39.4	Mar. 15, 1929
Geneva, Ala.	23	Apr. 23	Apr. 24	23.3	Apr. 23	46.9	Mar. 16, 1929
Caryville, Fla.	12	Mar. 23	Apr. 6	13.6	Mar. 28	27.1	Mar. 17, 1929
		Apr. 18	May 3	13.1	Apr. 3		
				13.3	Apr. 21, 25		
Conecuh:							
River Falls, Ala.	35	Mar. 31	Apr. 1	36.0	Mar. 31	50.5	Mar. 15, 1929
		Apr. 28	Apr. 30	39.0	Apr. 29		
Brewton, Ala.	17	Mar. 24	Apr. 5	19.8	Mar. 28	33.3	Do.
				18.9	Apr. 3		
		Apr. 27	Apr. 28	17.0	Apr. 27–28		
		Apr. 29	May 3	18.7	May 1		
Oostanaula:							
Resaca, Ga.	22	Mar. 29	Apr. 3	28.7	Mar. 31	36.6	Apr. 1, 1886
Rome, Ga.	25	do.	Apr. 2	29.0	Mar. 30–31	40.3	Do.
Coosa:							
Mayos Bar Lock, Ga.	28	do.	Apr. 3	32.9	Mar. 31	37.0	Dec. 30, 1932
Gadsden, Ala.	20	Mar. 28	Apr. 7	25.25	do.	36.7	Apr. 6, 1886
Lock No. 4, Lincoln, Ala.	17	do.	Apr. 5	20.8	Mar. 30	24.5	Apr. 9, 1938
Childersburg, Ala.	20	Mar. 29	Apr. 1	22.3	do.	30.0	Do.
Wetumpka, Ala.	45	Apr. 28	Apr. 29	45.5	Apr. 29	61.7	Apr. 1, 1886
Tallapoosa: Milstead, Ala.	40	Apr. 27	Apr. 28	46.1	Apr. 28	54.0	Dec. 10, 1919
Cahaba:							
Centerville, Ala.	23	Apr. 12	Apr. 12	25.4	Apr. 12	37.8	July 8, 1916
		Apr. 27	Apr. 27	25.0	Apr. 27		
Marion Junction, Ala.	36	Mar. 31	Apr. 2	37.5	Apr. 1	42.9	Aug. 16, 1939
Alabama:							
Montgomery, Ala.	35	Mar. 29	Apr. 4	45.8	do.	59.7	Apr. 1, 1886
		Apr. 27	May 2	48.3	Apr. 29		
Selma, Ala.	45	Mar. 30	Apr. 5	49.3	Apr. 2	57.0	Apr. 8, 1886
		Apr. 27	May 3	50.5	Apr. 30		
Millers Ferry, Ala.	40	Mar. 24	Apr. 10	51.3	Apr. 3	56.8	Mar. —, 1929
		Apr. 21	May 6	52.0	May 2		
Black Warrior:							
Lock No. 10, Tuscaloosa, Ala.	47	Mar. 28	Apr. 2	62.0	Mar. 30	68.6	Apr. 18, 1900
		Apr. 13	Apr. 13	47.3	Apr. 13		
Lock No. 7, Eutaw, Ala.	35	Mar. 28	Apr. 10	53.2	Apr. 2		
		Apr. 12	Apr. 18	42.2	Apr. 15		
		Apr. 25	May 2	41.3	Apr. 29		
Tombigbee:							
Aberdeen, Miss.	34	Mar. 28	Apr. 4	43.0	Mar. 30	44.8	Apr. 20, 1892
Columbus, Miss.	29	Mar. 29	Apr. 5	37.6	Apr. 1		Dec. 28, 1926
Gainesville, Ala.	36	do.	Apr. 16	50.6	May 5	47.1	Apr. 10, 1938
Lock No. 4, Demopolis, Ala.	39	Mar. 22	May 12	61.2	Apr. 7	73.1	Apr. 22, 1900
				52.9	Apr. 29		
Lock No. 3, Ala.	33	Mar. 21	May 15	59.3	Apr. 8–9	66.1	Apr. —, 1900
				56.1	Apr. 28		
Lock No. 2, Ala.	46	Mar. 23	May 13	60.7	Apr. 9	65.9	Apr. —, 1874
				58.4	Apr. 28		
Lock No. 1, Ala.	31	do.	May 16	41.5	Apr. 12	51.8	May —, 1874
				40.0	Apr. 22		
				41.8	Apr. 28		
Chickasawhay:							
Enterprise, Miss.	20	Mar. 30	Apr. 1	23.7	Mar. 31	37.2	Apr. —, 1900
		Apr. 20	Apr. 21	21.7	Apr. 21		
		Apr. 25	Apr. 30	26.3	Apr. 28		
Shubuta, Miss.	30	Apr. 3	Apr. 3	30.2	Apr. 3	47.9	Apr. —, 1900
		Apr. 23	May 3	37.4	Apr. 30		
Waynesboro, Miss.	35	Apr. 26	May 2	38.2	Apr. 27	48.4	Apr. 10, 1938
Pascagoula: Merrill, Miss.	22	Mar. 24	Apr. 7	24.4	Apr. 1–2	32.5	Apr. —, 1900
		Apr. 27	May 8	25.3	May 1		
Bogue Chitto: Franklinton, La.	11	Mar. 29	Apr. 1	13.7	Mar. 30	18.3	Mar. 22, 1943
Pearl:							
Edinburg, Miss.	20	Mar. 28	Apr. 4	25.9	Mar. 31	29.0	Mar. 1, 1902
		Apr. 27	May 1	22.1	Apr. 29		
Jackson, Miss.	18	Mar. 20	May 17	34.0	Apr. 4	37.2	Apr. 1, 1902
				27.3	Apr. 30		
				27.4	May 5		
Monticello, Miss.	15	Mar. 22	Apr. 17	18.2	Mar. 24	31.0	Apr. —, 1902
				22.6	Apr. 1		
				23.6	Apr. 8		
		Apr. 21	May 13	19.7	Apr. 25, 29		
				18.6	May 7		
Columbia, Miss.	17	Mar. 24	Apr. 18	18.6	Mar. 25		—, 1874
				22.3	Apr. 5		
				22.8	Apr. 10		
		Apr. 24	May 12	19.6	Apr. 28		
				18.4	May 7–8		
Pearl River, La.	12	Mar. 16	May 30	15.9	Apr. 2–3	20.2	—, 1874
				15.6	Apr. 5–17		
				15.5	May 8		

TABLE 2.—*Summary of provisional stages in Mississippi Valley floods of April–May 1944*

River and station	Flood stage	Maximum during floods of April–May 1944				Maximum during floods of April–June 1943		Maximum flood previously known	
		April		May					
		Stage	Date	Stage	Date	Stage	Date	Stage	Date
Upper Mississippi									
Iowa: Wapello, Iowa	10			14.7	25	8.1	June 22	16.2	March 1929.
Skunk: Augusta, Iowa	15	19.6	24	23.0	26	16.4	May 20	22.55	June 1930.
Raccoon: Van Meter, Iowa	13			18.3	21	12.7	June 16	19.0	September 1926.
Des Moines:									
Boone, Iowa	20			24.85	22	12.1	June 30	26.9	May 1903.
Des Moines, Iowa	23			24.5	23	16.8	do	[1] 22.6	Do.
Tracy, Iowa	14	16.0	24	21.55	23	15.7	May 17	25.0	Do.
Eddyville, Iowa	15	19.2	24	22.8	24	19.0	do	24.8	Do.
Ottumwa, Iowa	9	11.3	24	17.6	24	10.65	do	[2] 16.5	June 1917.
Keosauqua, Iowa	20			18.5	26	11.7	do		June 1903.
Fox: Wayland, Mo	15	18.5	24			15.3	May 18	21.5	June 1933.
Salt: New London, Mo	19	26.5	25			27.2	May 19	28.8	June 1928.
Illinois:									
Morris, Ill	13	18.3	24			21.6	May 21	26.85	—, 1866.
Peru, Ill	17	23.2	25			27.7	May 22	27.0	June 1916.
Peoria, Ill	18	23.6	27			28.6	May 23	26.3	June 1844.
Havana, Ill	14	23.3	29			27.3	May 25	23.5	October 1926.
Beardstown, Ill	14	26.2	29–30			29.7	May 26–27	26.25	do
Meramec:									
Pacific, Mo	11	13.4	25	14.8	4, 12	22.0	May 21		
Valley Park, Mo	14	18.2	25	18.7	4	26.2	May 22	37.85	August 1915.
Mississippi:									
Keokuk, Iowa	12	15.1	24–25	20.85	27–28	14.5	June 18	21.0	June 1851.
Quincy, Ill	14	19.1	25	23.0	28	17.4	do	22.1	Do.
Hannibal, Mo	13	19.6	25	22.5	28	17.7	do	22.5	June 1903.
Louisiana, Mo	12	19.2	26	19.8	28	17.6	May 21	21.1	April 1929.
Grafton, Ill	18	28.6	30	21.9	June 1	29.0	May 24	32.1	June 1844.
St. Louis, Mo	30	39.1	30			38.9	do	41.4	Do.
Chester, Ill	27	29.7	17–18	37.3	2–3	38.0	May 25	39.9	Do.
Cape Girardeau, Mo	32	34.8	18	40.8	6	42.4	May 27	42.5	July 1844.
Missouri Basin									
Kansas:									
Manhattan, Kans	17	20.7	23	21.1	3	23.0	June 16–17		
Wamego, Kans	16	17.0	23	16.9	4	20.9	June 17	26.3 23.8	May 1903. June 1935.
Topeka, Kans	21	25.4	23	23.9	3	26.8	do	42.2 28.0	June 1844. June 1908.
LeCompton, Kans	17	22.0	24	20.4	4	22.7	do	29.5	May 1903.
Lawrence, Kans	18	23.3	23	21.0	4				
Delaware: Valley Falls, Kans	22	25.1	23	26.8	3				
Thompson Fork: Trenton, Mo	20	20.9	23			18.9	May 16	30.3	July 1909.
Grand:									
Gallatin, Mo	20	31.5	24	26.1	5	27.0	June 12	39.25	Do.
Chillicothe, Mo	18	31.3	23	28.85	5	29.2	June 17	33.65	Do.
Brunswick, Mo	12	23.8	26	19.2	7	23.3	June 20	23.0	Do.
Osage:									
Quenemo, Kans	27	38.1	23			35.0	June 11	38.4	November 1928.
Ottawa, Kans	24	36.5	23			27.5	June 18	37.6	November 1928.
LaCygne, Kans	25	31.9	24			30.1	May 21	30.8	June 1925.
Trading Post, Kans	24	30.8	25			27.8	May 19	34.45	November 1928.
Osceola, Mo	20	22.4	13	31.6	1	41.5	May 21	45.3	June 1844.
Lakeside, Mo	60			61.4	3	65.4	May 22	62.3	October 1941.
St. Thomas, Mo	23	25.9	29	29.0	4	43.8	May 20	34.5	Do.
Missouri:									
Mobridge, S. Dak	16	16.6	5			18.95	Apr. 5		
Pierre, S. Dak	15	15.6	9			19.6	Apr. 6	23.0 17.9	March 1881. April 1899.
Blair, Nebr	18	21.0	13			21.4	Apr. 12	19.4	April 1939.
Omaha, Nebr	19	19.4	16			22.4	Apr. 13	23.8	April 1881.
Nebraska City, Nebr	15	19.6	17–18			19.9	Apr. 14	18.0	Do.
St. Joseph, Mo	17	18.5	21			18.5	June 18	27.2	Do.
Kansas City, Mo	22	27.6	24–25	23.5	4	29.1	June 18–19	38.0	June 1844.
Lexington, Mo	22	27.7	24	23.7	5	28.4	June 19		
Waverly, Mo	18	24.3	24	20.9	6	24.35	June 18	22.0	June 1935.
Boonville, Mo	21	30.9	27			28.8	June 22	32.7	June 1844.
Hermann, Mo	21	30.8	28			31.1	May 21	29.5	June 1903.
St. Charles, Mo	25	36.5	29			36.6	May 22	40.1	June 1844.
Ohio Basin									
West Fork of White:									
Anderson, Ind	10	17.4	12			19.0	May 18	22.9	March 1913.
Noblesville, Ind	14	17.6	13			20.1	May 19	23.8	Do.
Indianapolis, Ind	18					17.0	May 18	29.5	Do.
Elliston, Ind	18	27.7	14			30.0	May 21	31.3	Do.
Edwardsport, Ind	12	24.0	15			25.0	May 22	20.8	January 1937.
East Fork of White:									
Seymour, Ind	14	18.2	12			16.0	May 21	22.5	March 1913.
Williams, Ind	10	17.0	15			7.2	May 23	25.0	January 1937.
Shoals, Ind	25	27.8				15.8	May 17	42.2	March 1913.
White:									
Petersburg, Ind	16	23.8	15–17			24.3	May 22–23	28.1	January 1937.
Hazleton, Ind	16	25.9	18			26.4	May 23	31.6	Do.
Wabash:									
Bluffton, Ind	10	13.8	13			14.8	May 19	20.0	March 1913.
Wabash, Ind	12	20.8	11	12.9	10	24.8	May 18		
Logansport, Ind	17	15.9	12			21.4	May 19	25.3	Do.
La Fayette, Ind	11	22.8	13	15.2	10	28.4	do	32.9	Do.
Covington, Ind	16	26.3	14	17.8	12	32.4	May 20	35.1	Do.
Terre Haute, Ind	14	21.6	16	14.4	13–14	30.5	do	31.3	Do.
Vincennes, Ind	14	20.5	20			27.0	May 22	25.2	January 1930.
Mt. Carmel, Ill	17	24.2	20			27.5	May 25	31.0	March 1913.
New Harmony, Ind	15	19.7	20			23.8	May 26	24.4	January 1937.
Ohio:									
						48.6	March 29		
Paducah, Ky	39	41.2	4			40.7	May 30	60.6	February 1937.
Dam No. 53, near Mound City, Ill	42	50.5	26–28			52.1	do	64.0	Do.
Cairo, Ill	40	51.2	29			53.0	do	59.5	Do.

See footnotes at end of table.

TABLE 2.—*Summary of provisional stages in Mississippi Valley floods of April–May 1944*—Continued

River and station	Flood stage	Maximum during floods of April–May 1944				Maximum during floods of April–June 1943		Maximum flood previously known	
		April		May					
		Stage	Date	Stage	Date	Stage	Date	Stage	Date
Arkansas Basin									
Verdigris:									
Independence, Kans.	36	43.7	24			47.6	May 20	[1] 46.0	October 1927.
Claremore, Okla.	32	47.4	13	40.8	5	55.0	May 21	46.6	November 1941.
Cottonwood:									
Cottonwood Falls, Kans.	9	16.0	23					12.5	October 1941.
Emporia, Kans.	20	27.7	23	22.2	6	15.9	June 10	27.1	July 1904.
Neosho:									
Neosho Rapids, Kans.	22	28.2	23	23.5	4–5	25.1	June 18	29.5	Do.
Burlington, Kans.	23	35.0	24	25.7	6	27.2	June 19	34.4	November 1928.
Iola, Kans.	15	22.65	25			20.7	May 19	24.0	July 1904.
Chanute, Kans.	20	26.9	26			28.9	May 19	29.6	September 1926.
Parsons, Kans.	22	29.7	27			29.25	May 20	27.5	November 1928.
Oswego, Kans.	17	25.9	28			25.8	May 21	25.4	April 1927.
Arkansas:									
Wichita, Kans.	9	12.0	23	9.4	4	3.9	June 11	13.5	June 1923.
Arkansas City, Kans.	16	25.2	24	17.4	2	15.2	May 19	25.5	Do.
Ralston, Okla.	16	23.5	25			18.4	May 21	23.2	Do.
Tulsa, Okla.	12	17.0	26			16.7	May 20	19.8	Do.
Webbers Falls, Okla.	23	25.8	27	25.9	3	39.0	May 22	38.2	June 1833.
Fort Smith, Ark.	22	24.0	28	26.8	3	41.7	May 12	38.0	Do.
Van Buren, Ark.	22	24.7	13	26.8	4	38.0	May 12	35.8	November 1941.
Dardanelle, Ark.	22	23.4	14	26.3	4–5	34.0	May 25	33.0	April 1927.
Red Basin									
Ouachita:									
Arkadelphia, Ark.	17	25.6	24	25.8	2	18.5	Apr. 19	29.2	Do.
Camden, Ark.	26	33.1	28	42.0	5	31.4	Apr. 23	41.5	January 1937.
Monroe, La.	40	40.2	17–19	45.5	18–19	30.4	Apr. 10	49.7	February 1932.
Lower Mississippi Basin									
Mississippi:									
New Madrid, Mo.	34	40.4	30			41.3	May 31	47.9	February 1937.
Memphis, Tenn.	34			37.1	5	37.8	June 4	48.7	Do.
Baton Rouge, La.	35			41.3	17–23	38.8	June 14–15	47.8	May 1927.
New Orleans, La.	17			19.4	21	18.2	June 12	21.3	April 1922.

[1] Based on gage and datum then in use.
[2] At site of gage then in use; higher stage occurred.

TABLE 3.—*Precipitation and departures from normal in upper Mississippi Basin for period of flooding at Grafton, Ill., 1942–44*

State	Section of State	1944				1943				1942			
		April		May		May		June		May		June	
		Average precipitation	Departure from normal	Average precipitation	Departure from normal	Average precipitation	Departure from normal	Average precipitation	Departure from normal	Average precipitation	Departure from normal	Average precipitation	Departure from normal
Minnesota	Southwest	2.40	+0.11			4.23	+0.93	6.46	+2.29	7.07	+3.79	3.68	−0.45
Do.	Southeast	2.74	+0.51	[1] 5.20	[1] +1.95	5.14	+1.54	5.32	+.99	6.05	+2.48	4.15	−.17
Wisconsin	All	2.41	−0.09	3.65	−.01	4.50	+.84	5.75	+1.64	6.36	+2.72	4.66	+.58
Iowa	North central	3.10	+0.68			3.56	−.89	5.53	+1.04	5.30	+.81	5.24	+.74
Do.	Northeast	2.72	+0.24			3.44	−.88	4.69	+.39	4.71	+.39	7.37	+3.15
Do.	Central	4.34	+1.65			4.53	+.26	5.94	+1.36	5.18	+.89	6.60	+2.02
				[1] 6.13	[1] +2.06								
Do.	East central	4.74	+1.98			4.42	+.33	4.57	+.25	3.67	−.40	5.48	+1.16
Do.	South central	6.10	+3.26			5.28	+1.15	7.49	+2.72	4.35	+.22	6.12	+1.35
Do.	Southeast	6.74	+3.72			5.94	+1.90	4.95	+.15	3.35	−.69	5.29	+.49
Illinois	North	4.73	+1.70	4.35	+.40	6.22	+2.27	3.16	−.81	3.37	+.07	3.97	−.02
Do.	Central	7.75	+4.10	4.13	−.05	10.31	+6.12	3.77	−.18	4.38	+.31	6.03	+1.77

[1] Entire State.